

Appl. No. 10/708,606
Response dated June 3, 2005

Amendments to the Claims

Please amend the claims as follows:

- 1 [C1] (previously presented) A process for preparing syngas, comprising:
 - 2 partially oxidizing a first hydrocarbon portion with oxygen in a partial
 - 3 oxidation reactor to produce a first reactor effluent;
 - 4 cooling the first reactor effluent to a temperature from 650° to 1000°C;
 - 5 supplying the cooled first reactor effluent to a reforming exchanger;
 - 6 passing a second hydrocarbon portion with steam through a catalyst zone in
 - 7 the reforming exchanger to form a second reactor effluent;
 - 8 discharging the second reactor effluent from the catalyst zone to form an
 - 9 admixture with the first reactor effluent;
 - 10 passing the admixture across the catalyst zone in indirect heat exchange
 - 11 therewith to cool the admixture and heat the catalyst zone;
 - 12 collecting the cooled admixture from the reforming exchanger.
- 1 [C2] (previously presented) The process of claim 1, wherein the first reactor
- 2 effluent cooling comprises direct heat exchange with water introduced into
- 3 the first reactor effluent as a quench fluid.
- 1 [C3] (previously presented) The process of claim 2, wherein the first reactor
- 2 effluent cooling further comprises indirect heat exchange.
- 1 [C4] (previously presented) The process of claim 3, wherein the first reactor
- 2 effluent cooling by indirect heat exchange comprises heating the second
- 3 hydrocarbon portion in a cross exchange.
- 1 [C5] (previously presented) The process of claim 1, wherein the first reactor
- 2 effluent cooling comprises indirect heat exchange.
- 1 [C6] (previously presented) The process of claim 5, wherein the first reactor
- 2 effluent cooling by indirect heat exchange comprises heating the second
- 3 hydrocarbon portion in a cross exchanger.

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- 1 [C7] (original) The process of claim 1, wherein the catalyst zone comprises
2 catalyst tubes.
- 1 [C8] (original) The process of claim 5, wherein the second hydrocarbon portion
2 is supplied to a tube side of the reforming exchanger and passed through the
3 catalyst tubes.
- 1 [C9] (original) The process of claim 5, wherein the cooled first reactor effluent is
2 supplied to a shell side inlet of the reforming exchanger.
- 1 [C10] (original) The process of claim 7, wherein the shell side inlet is adjacent an
2 outlet end of the catalyst tubes.
- 1 [C11] (original) The process of claim 1 wherein the first and second hydrocarbon
2 portions are supplied in a weight ratio of from 40:60 to 95:5.
- 1 [C12] (original) The process of claim 1, wherein the first and second hydrocarbon
2 portions are supplied in a weight ratio of from 40:60 to 60:40.
- 1 [C13] (original) The process of claim 1, wherein the first and second hydrocarbon
2 portions are supplied in a weight ratio of from 95:5 to 80:20.
- 1 [C14] (previously presented) An apparatus for producing syngas, comprising:
2 partial oxidation reactor means for partially oxidizing a first hydrocarbon
3 portion with oxygen to produce a first reactor effluent;
4 means for cooling the first reactor effluent to a temperature from 650° to
5 1000°C;
6 means for supplying the cooled first reactor effluent to a reforming
7 exchanger;
8 means for passing a second hydrocarbon portion with steam through a
9 catalyst zone in the reforming exchanger to form a second reactor
10 effluent;
11 means for discharging the second reactor effluent from the catalyst zone to
12 form an admixture with the first reactor effluent;

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13 means for passing the admixture across the catalyst zone in indirect heat
14 exchange therewith to cool the admixture and heat the catalyst zone;
15 means for collecting the cooled admixture from the reforming exchanger.

[C15] (canceled)

[C16] (canceled)

[C17] (canceled)

[C18] (canceled)

[C19] (canceled)

[C20] (canceled)

[C21] (canceled)

1 [C22] (new) The process of claim 1 wherein the partial oxidation reactor is a non-
2 catalytic reactor.

1 [C23] (new) The process of claim 1 wherein the partial oxidation reactor is a free
2 flow, unpacked, non-catalytic reactor.

1 [C24] (new) The process of claim 1 wherein a temperature of the first reactor
2 effluent is greater than 1100°C.

1 [C25] (new) A process for preparing syngas, comprising:

2 partially oxidizing a first hydrocarbon portion with oxygen in a non-catalytic
3 partial oxidation reactor to produce a first reactor effluent having a
4 temperature greater than 1100°C;

5 cooling the first reactor effluent to a temperature from 650° to 1000°C;
6 supplying the cooled first reactor effluent to a reforming exchanger;
7 passing a second hydrocarbon portion with steam through a catalyst zone in
8 the reforming exchanger to form a second reactor effluent;
9 discharging the second reactor effluent from the catalyst zone to form an
10 admixture with the first reactor effluent;

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- 11 passing the admixture across the catalyst zone in indirect heat exchange
12 therewith to cool the admixture and heat the catalyst zone;
13 collecting the cooled admixture from the reforming exchanger.
- 1 [C26] (new) The process of claim 25, wherein the first reactor effluent cooling
2 comprises direct heat exchange of the first reactor effluent with water
3 introduced into the first reactor effluent as a quench fluid.
- 1 [C27] (new) The process of claim 26, wherein the first reactor effluent cooling
2 further comprises heat recovery via indirect heat exchange.
- 1 [C28] (new) The process of claim 27, wherein the heat recovery comprises heating
2 the second hydrocarbon portion in a cross exchanger.
- 1 [C29] (new) The process of claim 25, wherein the first reactor effluent cooling
2 comprises heat recovery via indirect heat exchange.
- 1 [C30] (new) The process of claim 29, wherein the heat recovery comprises heating
2 the second hydrocarbon portion in a cross exchanger.
- 1 [C31] (new) The process of claim 25, wherein the catalyst zone comprises catalyst
2 tubes.
- 1 [C32] (new) The process of claim 29, wherein the second hydrocarbon portion is
2 supplied to a tube side of the reforming exchanger and passed through the
3 catalyst tubes.
- 1 [C33] (new) The process of claim 29, wherein the cooled first reactor effluent is
2 supplied to a shell side inlet of the reforming exchanger.
- 1 [C34] (new) The process of claim 31, wherein the shell side inlet is adjacent an
2 outlet end of the catalyst tubes.
- 1 [C35] (new) The process of claim 25 wherein the first and second hydrocarbon
2 portions are supplied in a weight ratio of from 40:60 to 95:5.
- 1 [C36] (new) The process of claim 25, wherein the first and second hydrocarbon
2 portions are supplied in a weight ratio of from 40:60 to 60:40.

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- 1 [C37] (new) The process of claim 25, wherein the first and second hydrocarbon
- 2 portions are supplied in a weight ratio of from 95:5 to 80:20.